STATE OF NEW MEXICO
BEFORE THE SECRETARY OF THE ENVIRONMENT

IN THE MATTER OF THE APPLICATION OF BULLDOG COMPRESSOR STATION (XTO ENERGY) FOR AN AIR QUALITY PERMIT, NO. 8153-M1	**AQB 21-31**
JAYHAWK COMPRESSOR STATION (XTO ENERGY) FOR AN AIR QUALITY PERMIT, NO. 8152-M1	**AQB 21-32**
LONGHORN COMPRESSOR STATION (XTO ENERGY) FOR AN AIR QUALITY PERMIT, NO. 8349-M2	**AQB 21-33**
COWBOY CDP (XTO ENERGY) FOR AN AIR QUALITY PERMIT, NO. 7877-M1	**AQB 21-34**
WILDCAT COMPRESSOR STATION (XTO ENERGY) FOR AN AIR QUALITY PERMIT, NO. 7474-M2	**AQB 21-35**
ZIA HILLS CENTRAL FACILITY (CONOCOPHILLIPS) FOR AN AIR QUALITY PERMIT, NO. 7746-M8	**AQB 21-36**
WILLOW LAKE GAS PLANT (CRESTWOOD NEW MEXICO) FOR AN AIR QUALITY PERMIT, NO. 5142-M8	**AQB 21-38**
MAVERICK COMPRESSOR STATION (XTO) FOR AN AIR QUALITY PERMIT, NO. 7565-M2	**AQB 21-39**
SPARTAN COMPRESSOR STATION (XTO) FOR AN AIR QUALITY PERMIT, NO. 7681-M2	**AQB 21-40**
TIGER COMPRESSOR STATION (XTO) FOR AN AIR QUALITY PERMIT, NO. 7623-M2	**AQB 21-41**

TESTIMONY OF MOSHE WOLFE, P.E., AND JONATHAN SMITH, ON BEHALF OF CRESTWOOD NEW MEXICO PIPELINE LLC

I. Executive Summary

We, Moshe Wolfe, P.E., and Jonathan Smith,[1] submit the following testimony on behalf of Crestwood New Mexico Pipeline LLC ("Crestwood") in support of the permit application ("Application") for the Willow Lake Gas Plant (the "Facility") as described in more detail below.[2] Moshe Wolfe, P.E., is a Senior Environmental Engineer for Crestwood, and is responsible for air quality permitting and compliance activities for Crestwood's New Mexico and Texas assets. Mr. Wolfe worked directly with Trinity Consultants, Crestwood's air consultant for the Facility, to prepare the Application, as well as the updates and revisions to the Application described below. Jonathan Smith is Vice President – Operations for Crestwood's Permian and Niobrara assets. Mr. Smith is responsible for facility and pipeline operations in the Permian Basin, including the Facility, and for assets in Wyoming.

This February, Crestwood filed an application to modify the Facility's new source review permit (Permit No. 5142M7) by adding equipment: three compressor engines, one produced water/condensate tank, and a triethylene glycol dehydration unit and associated reboiler. The additional equipment will allow Crestwood to increase the gas gathering capacity of the Facility, accommodating increased production from upstream oil and gas producers and enabling those producers to send their gas for processing instead of flaring or venting in the field. The modeling submitted with the Application shows that the requested modifications will not result in exceedances of federal or state air quality standards.

Our testimony describes the Facility's operations and its current new source review ("NSR") permit. This testimony also details the history of the Application and describes the equipment that Crestwood seeks to add to the Facility if draft Permit No. 5142M8 is approved and the purpose of the additional equipment.

II. Overview of the Willow Lake Gas Plant and Current Operating Permit No. 5142M7

Crestwood owns the Willow Lake Gas Plant[3] in Malaga, New Mexico. The Facility is located approximately 2.67 miles southwest of Malaga, New Mexico, in Eddy County. The nearest occupied residential structure is 1,750 meters (more than a mile) to the north of the facility, and the community of Malaga, NM is even further away. Malaga is sparsely populated and home to only 114 residents. Crestwood began construction of the Facility in 2013 under New Mexico Environment Department's ("NMED") General Construction Permit No. 4. The Facility receives natural gas from gathering pipelines. Once in the Facility, the gas is either compressed, processed, and dehydrated, or only compressed and dehydrated, depending on the current operating "mode" of the Facility. When the Facility is operating in compression mode, the

[1] Mr. Wolfe's resume is attached as **Exhibit Crestwood-1**; Mr. Smith's resume is attached as **Exhibit Crestwood-2**.
[2] For an explanation of the modeling protocol used for the Application and responses to specific issues raised by WildEarth Guardians in their April 16, 2021 and June 28, 2021 petitions, please see Testimony of Adam Erenstein, Trinity Consultants, on Behalf of Crestwood New Mexico Pipeline LLC, filed simultaneously with Mr. Wolfe and Mr. Smith's testimony.
[3] NMED Facility ID 32575.

compressed gas is delivered to downstream users via the Orla Express Pipeline, owned and operated by Crestwood. When the Facility is operating in gas-processing mode, the treated gas is delivered to a third-party pipeline: the El Paso Natural Gas Transmission Pipeline.

The Facility is comprised of two natural gas processing units to recover natural gas liquids ("NGL"): (1) Willow Lake 1 is a turbo-expander cryogenic separation system that removes a significant fraction of the ethane and heavier hydrocarbon compounds from the natural gas stream (primarily composed of methane); and (2) Willow Lake 2 is a refrigerated Joule-Thompson plant that also removes ethane and heavier hydrocarbon compounds using a combination of mechanical refrigeration and a Joule-Thompson effect.[4] Both the turbo-expander cryogenic separation system at Willow Lake 1 and the Joule-Thompson plant in Willow Lake 2 cool the gas to liquify ethane and heavier hydrocarbons, resulting in NGLs that can be stored in pressurized tanks onsite and then transported offsite in a pressurized tank truck. It is necessary to remove the NGLs from other hydrocarbons via the cooling/liquification process to produce pipeline quality natural gas that can be delivered to a transmission pipeline.

Willow Lake 1 and Willow Lake 2 are designed to operate as two separate gas processing units (for NGL production as described above) or as standalone compressor stations. When operating as standalone compressor stations, Willow Lake 1 and Willow Lake 2 compress and dehydrate natural gas utilizing compressors, engines, and triethyleyene glycol units, but do not operate the equipment to process and remove NGLs from the natural gas stream. Thus, depending on the volume of gas received, and current market conditions, Willow Lake 1 and Willow Lake 2 provide Crestwood the flexibility to meet economic demands. This operational flexibility also allows for an overall reduction in emissions that would otherwise result if the Facility only operated as a gas processing plant. When Willow Lake 1 and Willow Lake 2 are operating in compression mode, some equipment is idled and emissions of nitrogen oxides (NOx), carbon monoxides (CO), volatile organic compounds (VOCs), and other air pollutants are reduced. The Facility primarily operates in compression mode and only anticipates operating in gas processing mode if natural gas gathering volumes significantly decrease.

A separate compressor station also is co-located at the Facility (the Willow Lake Compressor Station) and is combined with Willow Lake 1 and Willow Lake 2 into a single NSR permit.[5] The Willow Lake Compressor Station does not have the capability to process gas, but otherwise operates in a similar manner to Willow Lake 1 and Willow Lake 2 when Willow Lake

[4] The Joule-Thomson ("JT") effect is a thermodynamic process that occurs when a fluid expands from high pressure to low pressure at constant enthalpy (an isenthalpic process). Such a process can be approximated in the real world by expanding a fluid from high pressure to low pressure across a valve. Under the right conditions, this can cause cooling of the fluid.

[5] "NSR" refers to a federal air quality preconstruction permitting program requiring certain new major sources or modifications to existing major sources to obtain applicable permits prior to construction. The "type" of NSR permit is dictated by whether the source is in an attainment or nonattainment area for any NAAQS. Applicable sources in nonattainment areas must comply with applicable provisions of the "Nonattainment New Source Review" regulations, sometimes referred to as "NNSR." Applicable sources in attainment areas must comply with applicable provisions of the "Prevention of Significant Deterioration" regulations, known as "PSD." Thus, the entire air quality permitting program for new major sources or major modifications is known as "NSR"; while the type of "NSR" permit is dictated by whether the source is in a NAAQS nonattainment area for any given pollutant. Because the Facility is not in a nonattainment area, and is not a PSD "major" source as described below, this testimony discusses Crestwood's compliance with PSD *minor* source requirements under the New Mexico NSR program.

1 and Willow Lake 2 operate in compression mode. However, the inlet gathering system at Willow Lake Compressor Station is configured at a lower pipeline pressure, which allows the Willow Lake Compressor Station to gather and compress natural gas from upstream operators that operate at lower pressures.

Currently, the Facility is classified as a minor source under the NMED Prevention of Significant Deterioration ("PSD") regulations because the Facility's total emissions do not exceed the 250 tpy threshold. Although still a "minor" source PSD facility, on May 21, 2021, the Facility began operating as a Title V (Part 70) "major" source because Crestwood added and began operating the sources authorized by current Permit No. 5142M7.[6] Once Crestwood began operating the sources authorized by Permit No. 5142M7, the emissions from the Facility exceeded the 100 tpy Title V major source threshold for NO and CO,[7] requiring Crestwood to apply for a Title V permit. A source must obtain and operate under a Title V permit whenever emissions for any criteria pollutant exceed 100 tpy.[8] The Title V Operating Permit identifies all applicable federal and state emissions limits, monitoring, recordkeeping, and reporting requirement in a single document, but does not, by itself, impose any more stringent control requirements at the source. Thus, as is the case with this Facility, a source can be both "minor" for purposes of the PSD program, but "major" for Title V purposes. The Facility's initial Title V permit application is due by May 20, 2022.[9]

III. Crestwood's Application to Modify its Current Permit and Draft Permit No. 5142M8

On February 19, 2021, Crestwood filed the Application to modify its NSR permit for the Facility pursuant to NMAC 20.2.72.219.D(1)(a). Crestwood requested to add three compressor engines, a produced water/condensate tank, and a triethylene glycol dehydration unit and associated reboiler at the Willow Lake Compressor Station. *See* **Appendix A** for a detailed explanation of the requested revisions; the Amended Application is attached as **Crestwood Exhibit-3** (and the amendments are explained below). This additional equipment is necessary to increase the gas gathering capacity of the Facility to accommodate increased production from upstream oil and natural gas producers. Increasing Crestwood's gas gathering capacity will have positive environmental benefits, including a decrease in carbon dioxide and methane emissions from upstream oil producers because those producers will be able to send more gas to "pipeline" (i.e., the Facility) in lieu of flaring or venting the gas in the field.

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[6] Permit No. 5142-M7 (issued December 24, 2020) authorized initial construction of the Willow Lake Compressor Station which included five compressor engines and associated storage tanks and a new flare.

[7] Sitewide VOC emissions are indicated above 100 tons per year VOC in the draft Permit No. 5142M8, however, this is due to the inclusion of fugitive emissions. Fugitive emissions are excluded from Title V applicability per NMAC 20.2.70.7.R(2). Natural gas processing plants are not one of the 28 named sources included in the list in NMAC 20.2.70.7.R(2).

[8] A source may also be "major" under Title V for hazardous air pollutants ("HAPs") if any one HAP exceeds 10 tpy, or all HAPs collectively exceed 25 tpy. This is not an issue at this Facility.

[9] NMAC 20.2.70.300.B. requires a source to submit a permit to operate "within twelve (12) months after the source commences operation as a Part 70 source." Because Crestwood is not required to submit its initial Title V permit application until next year, the Facility does not currently operate under a Title V operating permit.

The Application also requests to revise some of the Facility's existing emission sources. Specifically, the Application seeks to: revise formaldehyde emissions because of higher catalyst control efficiency guarantees for seven of the existing compressor engines (i.e., cleaner engine exhaust); increase the volume of liquid throughput going through storage tanks and loaded into tank trucks; increase the volume of gas the Facility may need to control by flaring; and increase the estimate of fugitive components as a result of the additional equipment added.

With the Application, Crestwood submitted AERMOD air dispersion modeling for the Facility prepared by Trinity Consultants for CO, NO_2, SO_2, H_2S, $PM_{2.5}$ and PM_{10} to demonstrate compliance with the National Ambient Air Quality Standards ("NAAQS"),[10] as well as New Mexico Ambient Air Quality Standards ("NMAAQS")[11] and PSD Increments.[12] The AERMOD modeling shows that there will be no exceedances of any applicable NAAQS, NMAAQS or PSD Increments.[13] Please see Testimony of Adam Erenstein, Trinity Consultants, on Behalf of Crestwood New Mexico Pipeline LLC, filed simultaneously with this testimony, for a detailed description of the AERMOD model and discussion of its results. Mr. Erenstein's testimony also responds to specific issues related to draft Permit No. 5142M8 and the Facility's operations raised by Wild Earth Guardians ("WEG").

NMED designated the Application administratively complete on March 8, 2021, and labeled it Permit No. 5142M8. NMED published the Legal Notice and Preliminary Determination ("Notice") of the Application on March 20, 2021. The Notice provided the required 30-day public comment period (NMAC 20.2.72.206.A(5)).[14] The Notice stated written public comments could be mailed or emailed to NMED.[15] NMED also provided an additional 30-day public comment period (commencing May 28, 2021) in response to a request from WEG. A permit decision is required within 90 days of a permit being determined administratively complete (NMAC 20.2.72.207B(1)) or by June 16, 2021 in the case of draft Permit No. 5142M8. WEG filed a request for public hearing in a letter to NMED dated April 16, 2021 and NMED granted it.

In the Notice, NMED concluded the Facility would continue to meet the criteria to be classified as a PSD minor source after Crestwood makes the modifications requested and Permit No. 5142M8 is issued.

On September 14, 2021, Crestwood revised portions of the Application to manage an unanticipated increase in condensate experienced by the Facility. The increased condensate volume is the result of an incoming gas stream with a higher than anticipated BTU content entering the Facility from the wells that route gas to the Facility.[16] Because Crestwood's Facility

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[10] *See* 40 C.F.R. § 50.
[11] *See* NMAC 20.2.3.
[12] *See* 40 C.F.R. § 52.21; NMAC 20.2.74.
[13] A PSD Increment is the amount of pollution increase allowed in an area is in attainment with the NAAQS. The purpose of the PSD Increments is to prevent an increase in pollution large enough to cause an in-attainment area to become a non-attainment area.
[14] Legal Notice and Preliminary Determination for an Air Quality Permit for Crestwood New Mexico LLC, *available at*: https://www.env.nm.gov/air-quality/wp-content/uploads/sites/2/2021/04/AQBP-Revised-PN-5142M8_2.pdf.
[15] *Id.*
[16] Crestwood does not own the production wells.

only compresses and dehydrates the gas, Crestwood does not have control over the BTU content of the gas stream produced by wells in the field. To account for the additional condensate, Crestwood revised Application Forms UA2 and UA3 to:

- Increase the Willow Lake 1 and Willow Lake Compressor Station tank liquid throughputs. This required the following amendments:
    - Removal of the ability for the Willow Lake 1 storage tank to vent gas to atmosphere during VRU downtime. Instead of venting gas during VRU downtime, this gas will continue to be controlled by flare under the existing conditions in Permit No. 5142M7.
    - Update to the Willow Lake Compressor Station tank calculation based on the current pressurized liquid speciation for the Facility.
    - Update to the Application to indicate that Willow Lake 1 and Willow Lake Compressor Station emissions during VRU downtime that are uncombusted at the flare are accurately represented at the flare emission point, which has a destruction removal efficiency of 98%.
- Increase the truck loading throughput volume and route truck loading vapors to flare during condensate loading from the Willow Lake 1 and Willow Lake Compressor Station tanks; this change will result in an overall reduction of VOC emissions.
- Revise flare calculations to address revised tank throughputs and truck loading vapors from Willow Lake 1 and Willow Lake Compressor Station condensate loading (includes additional purge gas).

Separately, Crestwood submitted an administrative revision to NMED on September 15, 2021. This administrative revision requests that NMED authorize four electric powered pumps, which will be used to pump liquids from the produced water/condensate tanks at Willow Lake 1 and the Willow Lake Compressor Station into the Orla Express Pipeline. Transporting more liquids by the Orla Express Pipeline will decrease the need to use tank trucks to loadout and transport liquids, thereby decreasing overall tank truck loadout emissions. Accordingly, Crestwood revised the fugitive emission calculations (FUG-2) in UA2 and UA3 to account for additional pumps in fugitive emission calculations.

It is typical for an applicant to provide revised emissions calculations or representations during the air permit application review process, and that occurred here. Furthermore, the revisions that Crestwood provided to NMED, listed above, resulted in an overall decrease in emissions at the Facility by eliminating Willow Lake 1 tank venting to atmosphere and the control of tank truck vapors from Willow Lake 1 and Willow Lake Compressor Station storage tank offloading. The Facility-wide potential-to-emit decreases from these changes are 0.3 tons of NOx per year, 0.5 tons of CO per year, and 14.4 tons of VOCs per year.

NMED agreed with the requested revisions and incorporated them into the revised draft permit dated and posted to the NMED website on September 21, 2021. NMED posted the revised draft permit before the 30-day deadline to provide notice of the hearing.[17]

[17] *See* NMAC 20.1.2.205.A requires notice of hearing "no later than thirty (30) days prior to the hearing date . . . ."

Because WEG requested a public hearing on the Application, the permit decision date was extended (NMAC 20.2.72.207.C(1)). The Hearing Officer combined Crestwood's Permit No. 5142M8 hearing with permit hearings for other operators. The combined hearing is scheduled to begin on October 25, 2021. Crestwood may not begin any construction, modification or installation requested in the Application until the Department issues Permit No. 5142M8.[18]

IV. Conclusion

The Facility consists of two gas processing units (Willow Lake 1 and Willow Lake 2), as well as an additional compressor station (Willow Lake Compressor). The Facility receives natural gas from wells in the area via gathering pipelines; compresses, processes, and dehydrates the gas or compresses and dehydrates the gas; and then delivers the treated gas to downstream users via Crestwood's Orla Express Pipeline or the El Paso Natural Gas Transmission Pipeline. The Application requests to modify the Facility's new source review permit by adding equipment: three compressor engines, one produced water/condensate tank, and a triethylene glycol dehydration unit and associated reboiler. The additional equipment will allow Crestwood to receive and treat more gas, avoiding carbon dioxide and methane emissions from gas that would otherwise be vented or flared in the field. The Application contained all information required by New Mexico's air quality regulations and complied with the public notice requirements. Draft Permit No. 5142M8 should be approved because it complies with all applicable regulations and will not result in exceedances of the NAAQS, NMAAQS, or PSD Increments.

/s/ Moshe Wolfe, P.E.
Moshe Wolfe, P.E., Senior Environmental Engineer
Crestwood New Mexico Pipeline LLC

/s/ Jonathan Smith
Jonathan Smith, Vice President – Operations
Crestwood New Mexico Pipeline LLC

[18] *See* NMAC 20.2.72.200.E.

APPENDIX A

Detailed Summary of Draft Permit No. 5142M8's Proposed Modifications to the Facility

Crestwood submitted its Application for Draft Permit No. 5142M8 as a significant revision to its current Permit No. 5142M7 (NMAC 20.2.72.219.D(1)(a)). New Mexico regulations requires an operator to apply for a significant revision when the operator proposes to modify any source or revise any term or condition of its permit, including but not limited to, "emissions limitation, control technology, operating conditions, and monitoring requirements" that do not meet the criteria under the provisions for administrative or technical permit revisions under NMAC 20.2.72.219.A (administrative permit revisions) or B (technical permit revisions). The Application meets these terms.

In the Application, Crestwood requested authorization from NMED to make the following modifications to the Facility:

- Add three (3) natural gas-fired Caterpillar G3606 4SLB compressor engines rated at 1875 hp and associated compressors (Units C-1160 through C-1180);

- Add one (1) 400 bbl produced water/condensate tank associated with the compressor station (Unit WLCS-TK2304); and

- Add one (1) Triethylene Glycol dehydration unit rated at 80 MMSCFD (Unit DEHY-1505) and one (1) associated 1.5 MMBtu/hr reboiler (Unit HTR-1505).

As part of the Application for Permit No. 5142M8, and as required by NMAC 20.2.72.219.D(1)(a), Trinity reviewed the emission calculations for all existing sources at the Facility including the additional equipment identified directly above. As a result of Trinity's review, Crestwood updated the following emissions calculations:

- Three (3) natural gas-fired Caterpillar G3606 4SLB compressor engines rated at 1875 hp and associated compressors (Units C-1160 through C-1180);
- One (1) 400 bbl produced water/condensate tank associated with the compressor station (Unit WLCS-TK2304);
- One (1) Triethylene Glycol dehydration unit rated at 80 MMSCFD (Unit DEHY-1505); and
- One (1) associated 1.5 MMBtu/hr reboiler (Unit HTR-1505).

Crestwood requested to update the following emissions calculations:

- Formaldehyde control efficiency for existing compressor engines based on updated catalyst guarantees (Units C-2300 and C-2400, C-1110 through C-1150);
- The Willow Lake 1 Flare (Unit WL1-FL) calculations to account for truck loading vapors from Willow Lake 1 and Willow Lake Compressor Station tanks as well as flash tank vapors from the dehydration units (Units DEHY-803, DEHY-804, DEHY-805, and

DEHY-1505) in the event flash gas is not burned as fuel, and the VRU is out of service for maintenance;

- Willow Lake 1 and Willow Lake Compressor Station tank calculations based on estimated increases in liquid throughputs (Units WL1-TK601 through WL1-TK603 and WLCS-TK2301 through WLCS-TK2303). An updated pressurized condensate analysis (dated 8/19/2021) was also used for Willow Lake Compressor Station tank and loading calculations; and
- Atmospheric loading calculations (Unit ATM LOAD) to take into account increased liquids throughput associated with Willow Lake 1 and Willow Lake Compressor Station; new pressurized condensate analysis for Willow Lake Compressor Station as well as updated maximum hourly loading estimates for Willow Lake 2. This includes updating Willow Lake 1 and Willow Lake Compressor Station loading vapors to be routed to the flare. Loading vapors associated with Willow Lake 2 are uncontrolled.

Crestwood requested the following additional updates:

- Fugitive component counts and separating fugitive components based on federal regulatory applicability (Units FUG-1 and FUG-2) and estimated component increases;
- Unit numbering from ENG-1 through ENG-5 to C-1110 through C-1150; and
- Control device numbering on engines from C-1 through C-9 to Oxcat-1100, NSCR-1200, NSCR-2300, NSCR-2400 and OxCat-1110 through OxCat-1150.